

12AB5

BEAM POWER TUBE

For Use in Automobile Radio Receivers Operating From 12-Volt Storage Batteries

9-Pin Miniature Type

TENTATIVE DATA

RCA-12AB5 is a beam power tube of the 9-pin miniature type designed for use as the output amplifier in automobile radio receivers operating from a 12-volt storage battery.

The 12AB5 can provide high power output because of its high power sensitivity and high efficiency. For example, in class A_1 amplifier service, a single 12AB5 operated with a plate voltage of 250 volts, and a grid-No.2 voltage of 250 volts, can deliver a maximum-signal power output of 4.5 watts with a peak driving voltage of only about 12.5 volts. This performance, together with relatively low plate-current drain, make the 12AB5 especially suitable for use in the output stage of automobile receivers.

Design features of the 12AB5 include a large plate structure to allow for greater heat dissipation, a heater specially processed to withstand the severe operating conditions encountered during battery charging and discharging, and double base-pin connections for grid No.1 and grid No.2 to provide for cooler grid operation and greater flexibility of circuit connection.

GENERAL DATA

Electrical:

Heater for Unipotential Cathode:●

Voltage Range	10.0 to 15.9	volts
This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.		
Current (Approx.), at 12.6 volts	0.2	amp

Direct Interelectrode Capacitances (Without external shield):

Grid No.1 to plate	0.7 max.	μμf
Grid No.1 to heater, cathode & grid No.3, and grid No.2	8	μμf
Plate to heater, cathode & grid No.3 and grid No.2	8.5	μμf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)

SINGLE-TUBE CLASS A_1 AMPLIFIER

Maximum Ratings, *Design-Center Values:*

For application of these design-center ratings to storage-battery operation, see Operating Considerations.

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	285 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 INPUT	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	250 max.	°C

Characteristics with 12.6 volts on heater:

Plate Voltage	250	250	volts
Grid-No.2 Voltage	200	250	volts
Grid-No.1 Voltage	–	-12.5	volts
Cathode-Bias Resistor	270	–	ohms
Peak AF Grid-No.1 Voltage	10.5	12.5	volts
Zero-Signal Plate Current	33.5	45	ma
Max.-Signal Plate Current	36	47	ma
Zero-Signal Grid-No.2 Current (Approx.)	1.6	4.5	ma
Max.-Signal Grid-No.2 Current (Approx.)	3.2	7.0	ma
Plate Resistance (Approx.)	75000	50000	ohms
Transconductance	4000	4100	μmhos
Load Resistance	6000	5000	ohms
Total Harmonic Distortion	8	8	%
Max.-Signal Power Output	3.3	4.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL CLASS AB_1 AMPLIFIER

Values are for two tubes

Maximum Ratings, *Design-Center Values:*

For application of these design-center ratings to storage-battery operation, see Operating Considerations.

PLATE VOLTAGE	315 max.	volts
GRID-NO.2 (SCREEN) VOLTAGE	285 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-NO.2 INPUT	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface	250 max.	°C

Characteristics with 12.6 volts on heater:

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage	-15	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	30	volts
Zero-Signal Plate Current	70	ma
Max.-Signal Plate Current	79	ma
Zero-Signal Grid-No.2 Current (Approx.)	5	ma
Max.-Signal Grid-No.2 Current (Approx.)	13	ma
Plate Resistance (Approx.)	60000	ohms



PUSH-PULL CLASS AB_1 AMPLIFIER (Cont'd)

Characteristics with 12.6 volts on heater:

Transconductance	3750	μmhos
Effective Load Resistance (Plate-to-plate) . . .	10000	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	10	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:	
For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

● Operation of heater in series with other heaters is not recommended.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AB5 are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in storage-battery-operated equipment provided the following stipulations are observed:

In the case of storage-battery-with charger supply or similar supplies, the normal battery-voltage fluctuation may be as much as 35 per cent or more. This fluctuation imposes severe operating conditions on tubes. Under these conditions, the equipment should be designed so that 90% of the design-center maximum values of plate voltage, grid-No.2 voltage, plate dissipation and grid-No.2 input is never exceeded for a battery terminal potential of 13.2 volts. Although the operating voltages of the 12AB5 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.

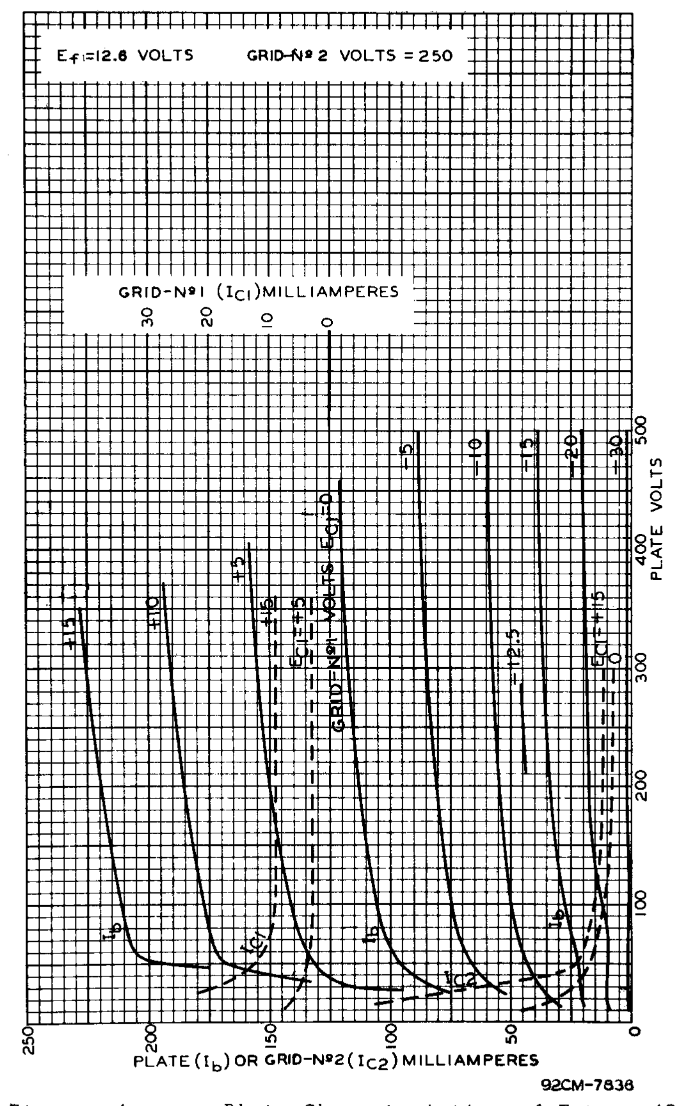


Fig. 1 - Average Plate Characteristics of Type 12AB5.

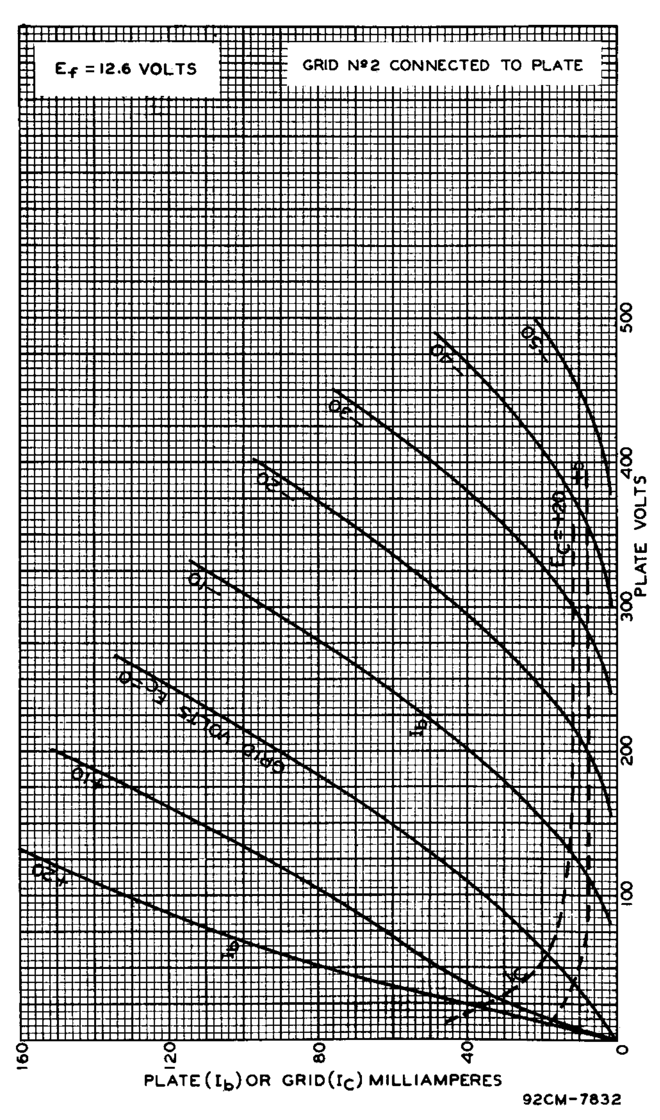


Fig-2 - Average Plate Characteristics of Type 12AB5 Connected as Triode.

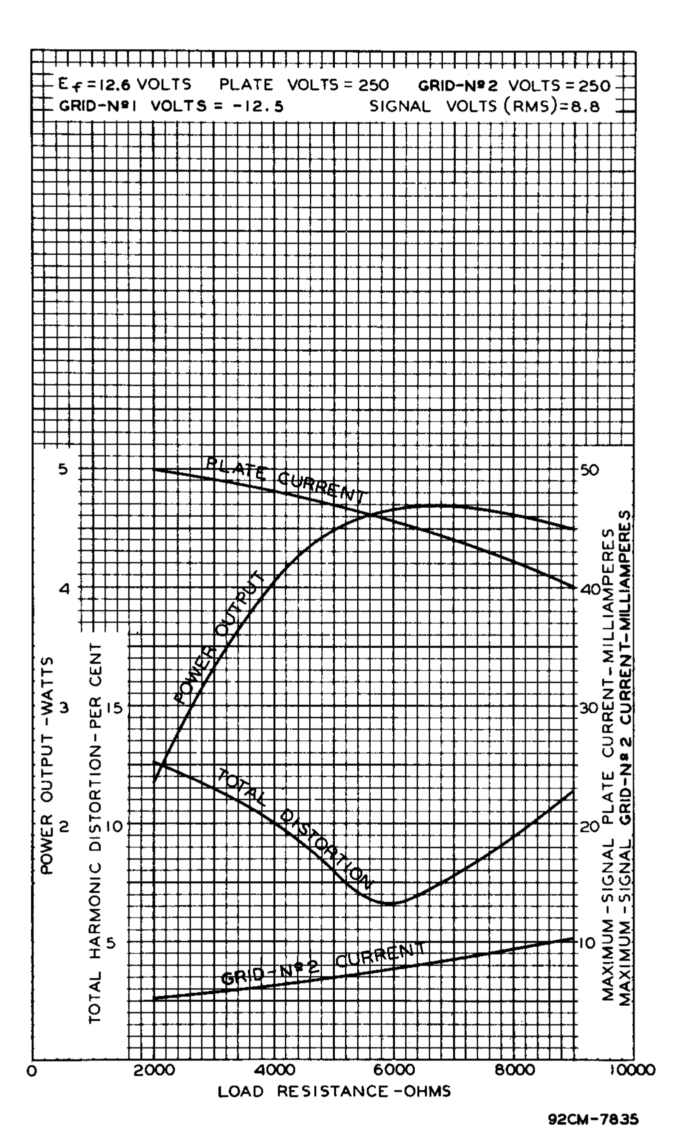
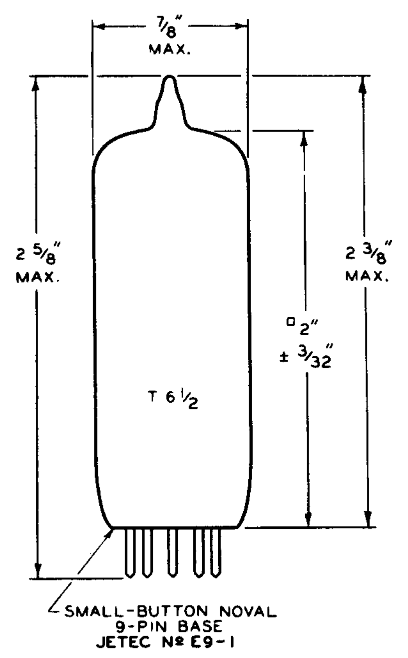


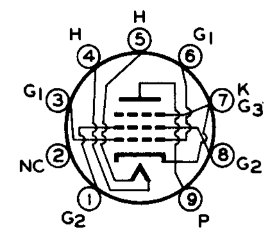
Fig. 3 - Operation Characteristics of Type 12AB5.

DIMENSIONAL OUTLINE



□ MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY RING GAUGE OF 7/16" I.D.

SOCKET CONNECTIONS
Bottom View



PIN 1: GRID No.2
PIN 2: NO CONNECTION
PIN 3: GRID No.1
PIN 4: HEATER
PIN 5: HEATER
PIN 6: GRID No.1
PIN 7: CATHODE, GRID No.3
PIN 8: GRID No.2
PIN 9: PLATE